PROJECT BASED LEARNING FOR CHİLDREN WITH MILD MENTAL DISABILITIES

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The aim of this investigation was to determine the effectiveness of a project-based learning program delivered to children with mild mental disabilities. The 7 children (4 girls and 3 boys) selected for this experimental study were from an elementary school and attending a special class. The theme of the project was Patisserie. *At posttest the group performed significantly better than at pretest in general and in all subtests (point to the patisserie, point to the foods/drinks, point to the workers, point to the things at the patisserie, what we give to the waiter before leaving and proper behavior at the patisserie). Results showed the importance of project-based learning for the children.*

As most educators know students learn more when they are responsible for their own learning. Project-based learning emphasizes educational opportunities that are student-centered, collaborative, and integrated with real-world issues and practices (Temel, Kandır, Erdemir & Ciftcibası, 2004; Korkmaz, 2002; Macphee, Rashotte & Torgesen, 2001; Paris & Alison, 2001). It is one of the most effective learning strategies for constructing knowledge and thinking creatively (Astrid & Cooper, 2000). Project learning supports and reinforces many of the principles emphasized in brain-based learning (DeJong, 1999). Also children can develop their reflective thinking and problem solving skills through project-based learning (Acıkgoz 2003; Demirel, 2000; Helm & Gronlund, 2000; Katz & Chard 1998). Related studies suggest that preschool programs based on child-initiated learning contribute to children's academic and social development (Schweinhart, 1997). Researchers believe in the strong effect of project-based learning in the early years (Guven, Zembat & Sahin 2003; Temel, Ciftcibası & Unal, 2003; Helm & Katz, 2001; Chard, 1999).

Project-based learning is a deep investigation of selected topics that are relevant for both learner and teacher. Project work in early childhood provides children skills and also supports a child's natural impulse to investigate things. The main aim of a project is to gather knowledge through focusing related questions on a topic (Chard, 1998; Katz, 1994). Project situations also improve peer and teacher interactions (Yun, 2000; Paris & Alison, 2001). Students may use different parts of their intelligence and scientific thinking through the project experience (Clark, 2000). At the same time an individual can find original solutions instead of standard ones by working on projects (Astrid & Cooper, 2000; Barak & Doppelt, 1999).

Teachers in project-based classrooms use different and varying teaching strategies more than traditional teachers. It can be applied to large or small groups and even individually depending on the situation (Helm & Katz, 2001; Dowel, 1996). During projects, teachers and children work together to select the topic of a project, plan the activities needed to research the topic and finally share their learning after completing those activities. Projects have to consider the interests, and the developmental and cultural features of the children, and have to provide active participation in the project when applied (Katz 1994; Sloane, 2004). Instead of always giving students the information, teachers who facilitate projects perfect strategies of reflecting questions back to children. Student roles in project-based classes are usually different than in most classrooms. Projects offer an effective child-centered approach. On any given day, students might collaborate on a list of questions they have; research books, magazines, or Internet sites for answers to their questions; interview people they consider experts on the topic; write inquiry letters; draft fact cards; plan a field trip; or any number of other activities (Katz, 1994).

Children can make decisions with the guidance and support of the teacher. During the projects, families may join in the learning situations. For instance they may take their children to places related to the selected topic (Diffily, 2001).

Children with mental disabilities have many limitations compared to normally developing peers, however they may also learn lots of things if given the opportunity and educated in an appropriate way (Helm & Katz, 2001).
In this investigation, in consideration of some of the limitations of mentally disabled children, researchers adapted the project-based approach for these children. Thus, the present study was designed to determine the effectiveness of a project-based program delivered for students with mild mental disabilities (aged 6-7 years) over a six day period. The total duration of the project was almost 2 ½ weeks.

METHOD
Participants
Participants were 7 children (4 girls and 3 boys) attending a special class at a public elementary school in Istanbul. The children were in the age group of 6 to7 years (mean age=82 months) and had mild mental disabilities as identified by Counseling and Research Centers and according to information given by their school administration. It was not possible to get permission to have the individuals' IQ scores. The school population included a high proportion of families considered socially and economically middle class. Four of the children never had a patisserie experience before while the remaining 3 had been to patisseries only occasionally. This was the first time these children had participated in such an educational strategy.

Material
A test package (Patisserie Test Material) was developed and presented to the children to gather data for this study. The test material had been developed by the researchers, including peer review by another special educator. It consisted of 6 subtests (50 questions in total) consisting of one page for each question, and each page having a relevant picture. Each of the first 4 subtests included 10 questions (40 question in total). The first 5 questions in each consisted of 2 choices while the last 5 questions consisted of 3 choices. In subtests 5 and 6 only 5 sample questions with 2 choices were asked. A student could earn a total of 50 points for answering each question correctly.
Children were asked each time to point the correct picture. The samples varied in terms of difficulty. Children were tested individually in a quiet setting, and each testing session took approximately 25 minutes depending on the child's performance. However during the testing some children needed a short break. If the child seemed not understood a question or did not give full attention, she/he was given a second, and occasionally a third chance. In these extra chances, the researcher asked the question in other words but without giving clues to try to gain needed attention. The subtests of the material were as follows:

Point the patisserie*: Show me the Patisserie in this picture*
Children were asked to point to the patisserie (For example; Patisserie -hospital, post office-Patisserie-library).
Point the foods/drinks*: Show me the one that we can eat/drink at a patisserie*
The children were asked to point to the food one can eat at a Patisserie (For example; pasta-chicken; soup-coffee-meal)
Point the workers*: Show me the person who works at a patisserie*
The children were asked to point to the person who works at a patisserie (For example; waiter-doctor, police-waiter-captain)
Point the used things at the patisserie*: Show me the thing that are used at a patisserie*
The children were asked to point to things used at a patisserie (For example; ball-cup, iron plate- pillow)
What do we give to the waiter before leaving*: Show me the one that we give to the waiter when we are all done* (For example; money-sugar, flower-money)
Proper behavior at the patisserie*: Show me nice behavior when we are at a patisserie* (For example; shouting-eating appropriately)

Procedure

All children were given a pretest before the program was applied.

Preliminary planning

The researchers and the teachers selected the topic of study based on the children's interests and the availability of a patisserie close to the school. The teachers and researchers planned the days ahead. A letter was sent home to the parents to let them know what was being studied and ask if they would like to help with the Project. Also teachers asked parents to bring their child to a patisserie at weekend if possible. They also asked to send materials to school with their children, such as menu, receipt, pictures and photographs of visits etc. (Helm & Katz, 2001).

Phase 1

Just before the weekend the teachers told simple stories from their own experiences of eating out in a restaurant or patisserie and the children shared their experiences with the class. Through the conversation the teachers found out where the children had eaten out, what they had eaten etc. They found out how much they knew about eating out in a patisserie. They were told what to bring from home on first day of the next week. On this day the children saw lots of pictures around the classroom related to patisseries. The children were asked to show their classmates what they brought from home with them, and to talk about them and talk about their experiences if they had had a previous visit to a patisserie. Also they talked about the pictures they saw around the room. Then they completed some art studies such as coloring in printed pictures of things related to a patisserie, or some independent paintings about patisserie etc. They then showed their pictures and told classmates about what they had done.

Phase 2

The second day they were reminded what they talked about the day before, using the pictures and things around the classroom about the patisserie. The teacher read a story about a patisserie. She asked some questions related to the story, and then helped the children to dramatize the story. The third day they went to a patisserie around the school. Teachers explained items at the patisserie during this field work. They brought a few souvenirs (napkins, receipt, nylon and paper bags) to remind the students about the patisserie back in the class. The children were asked to tell their classmates what they did at the patisserie when they came back. The forth day the classroom was set up as a patisserie getting children involved in a dramatic play, about all the different work being done there.

Phase 3

The last period of a project-based study is assessing and sharing what has been done so far with the children. This can be a verbal presentation, asking questions, concept mapping, and so on (Katz 1994; Sloane 2004; Schuler, 2000). Since it was the last period, on the last day of the week the children were asked to remember and tell each other what they did, where they went. Teachers assisted children to make a concept map using the materials, pictures etc. about patisserie concluding the project (Helm & Katz, 2001). Through the concept map they saw what we eat at a patisserie, what we drink at a patisserie, who works at a patisserie, the things we use at a patisserie, things we give to waiter before leaving and the ways of behaving nicely at a patisserie.

As it known classrooms in Turkey where children are actively engaged projects are also classrooms where children make observations, home studies, sings songs, take trips, invite guests, participate in dramatization, etc. (Sloane, 2004; Helm & Katz 2001; Katz 1994). Researchers used several techniques to promote their active engagement. The children participated in all parts of the project as much as they could. Because of their special needs researchers assisted more and made some adaptations through the project. The teachers adjusted the level of difficulty of the tasks to fit the level of development of the child depending on the child's individualized education program (Kirk, Gallagher & Anastasiow, 2003).

Finally, first day of the third week post tests were given to the children to evaluate the effectiveness of the study.

RESULTS

The results are given in the table below and related to the test material and subtests explained before.
To check whether there were significant differences between pre and post tests Wilcoxon Signed Rank Test for Paired Samples was used and results indicated significant differences between the two tests at all parts of the test. The seven participants' case reports can be seen in Table 1. As the data show, the

participants significantly (p< .05) increased their knowledge at each part and in total related to patisserie after this project-based program.

Table 1
Wilcoxon Signed Rank Test for Paired Samples analyzes of pre-test and post test scores

Point the patisserie	N	Mean Rank	Sum of Ranks	z	p
Negative Ranks	0	,00	,00	2.20	0.027
Positive Ranks	6	3,50	21,00		
Ties	1				
Point the foods/drinks	**N**	**Mean Rank**	**Sum of Ranks**	**z**	**p**
Negative Ranks	0	,00	,00	2.23	0.026
Positive Ranks	6	3.50	21,00		
Ties	1				
Point the workers	**N**	**Mean Rank**	**Sum of Ranks**	**z**	**p**
Negative Ranks	0	,00	,00	2.41	0.016
Positive Ranks	7	4,00	28,00		
Ties	1				
Point the things at the patisserie	**N**	**Mean Rank**	**Sum of Ranks**	**z**	**p**
Negative Ranks	1	1,50	1,50	2.13	0.033
Positive Ranks	6	4,42	26,50		
Ties	0				
What do we give to the waiter before leaving	**N**	**Mean Rank**	**Sum of Ranks**	**z**	**p**
Negative Ranks	0	,00	,00	2.07	0.038
Positive Ranks	5	3,00	15,00		
Ties	2				
Proper behavior at the patisserie	**N**	**Mean Rank**	**Sum of Ranks**	**z**	**p**
Negative Ranks	0	,00	,00	2.32	0.026
Positive Ranks	6	3,50	21,00		
Ties	1				
Patisserie in total	**N**	**Mean Rank**	**Sum of Ranks**	**z**	**p**
Negative Ranks	0	,00	,00	2.38	0.017
Positive Ranks	7	4,00	28,00		
Ties	0				
Total	7				

Discussion
This study was conducted to investigate effectiveness of the project-based learning for children with mild mental disabilities from a self-contained classroom. During the project they had opportunities to experience different aspects of patisserie. They learned, to differentiate patisserie from other places, to

differentiate foods and drinks which are served at patisserie, to differentiate workers who work for patisserie, to differentiate things belong to patisserie, what do we do (give) before leaving, and proper behaviors at patisserie. These data indicate that project-based learning was effective for children with mild mental disabilities at all stages. The result was shown to be that this procedure could be used successfully in classroom settings by teachers to support children's learning and to investigate things around them.

Helm and Katz (2001) suggested that not only normally developing children but also special needs children from both self-contained or full inclusion classrooms can gain benefits from project-based learning situations if teachers make some appropriate adaptations concerning the child's needs and development. Project includes a variety of experiences and activities and these can be integrated into the child's individual educational plans (IEPs). According to Edmiaston (1998) projects allow teachers to implement both individually and developmentally appropriate educational experiences for all children in the classroom. Project work is particularly well suited the needs of young children with disabilities who are integrated or included in early childhood classrooms, for instance: a) early childhood special educators can design and implement successful inclusion focusing on group efforts and on relationships with other children, teachers, family, and the community through projects. Children who see their classroom as a community are more likely to develop a sense of obligation to others. b) Projects emerge in relationship to children's interests. Taking children's interests seriously is at the heart of developmentally appropriate or constructivist education. Interest is particularly important in engaging children with special needs in learning experiences. It may require careful observation for the teacher to identify children's interests c) Children's IEP goals can be easily included into projects in ways that make the learning experience more meaningful and purposeful for the child d) Work in small groups provides a social context for meaningful discussions, collaborative problem-solving, and productive cognitive and social conflict resolution. Small group learning experiences will more likely ensure that the individual goals of children with disabilities are being met.

Conclusion
DeJong (1999) indicated that; project-based instruction is not a new idea in education. However, it has never been systematically developed for effective use within programs of early childhood special education. Children with and without disabilities can engage in learning experiences at their own level to meet their physical, social, or academic goals. Projects can promote the effective inclusion of children with disabilities into early childhood programs also enables teachers to address the diverse needs of children. This research now suggests that it is not only an effective learning strategy for normally developing young children, but it is also useful for teachers educating special needs children. It is right to make project learning an integral part of special education in early childhood.

As a real life experience was selected as the topic for this study, it shows that children can gain benefits through out their life. They may use what they learned in their social context and this may help their socialization. It is also important because it integrates school and social environment in a relevant context.

Previous studies showed that teachers of at risk or special needs children had positive feelings about the effect of a project approach when applied in their classrooms. They believe that it enables teachers to assess children's ability to apply knowledge and skills in a natural context (Beneke, 2000). This approach may also have contributed to teachers' success as well as students'. It was also seen during this study that the children were able to maintain interest in the topic and made an important improvement which made a positive contribution to the researchers' views and success since they were hesitant before starting the project. The classroom teachers felt that the effort required to apply this approach was well worth it.

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